

The Role of Sustainable Loan Products in Managing Sustainability Risks in German Regional Banks

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Abstract: This study examines the role of sustainable loan products, such as Green Loans and Sustainability-Linked Loans, in managing sustainability risks for regional banks in Germany. Based on a survey of 88 Less Significant Institutions and 18 Significant Institutions, the findings show that regional banks predominantly rely on subsidized loans due to their simplicity and low administrative costs. However, these loans lack flexibility to address specific sustainability risks. In contrast, Green Loans and Sustainability-Linked Loans offer greater adaptability but require significant resources for implementation, monitoring, and verification. Challenges such as limited demand, technical constraints, and insufficient sustainability data, particularly from small businesses, further limit their adoption by regional banks. To overcome these barriers, support from IT service providers, banking associations, and targeted market education is essential. Despite the challenges, sustainable loan products present an opportunity for regional banks to enhance resilience, strengthen local economies, and contribute to a sustainable financial system.

1 INTRODUCTION

The consideration of sustainability risks in banks' risk management is becoming increasingly important due to regulatory requirements, as well as growing weather extremes and societal changes and expectations related to social and governance factors. In particular, regional banks, which form the backbone of the German banking sector, face specific challenges in managing these risks due to their regional focus. These risks arise from environmental, social, or governance (ESG) events and can negatively impact the creditworthiness of (local) businesses (Federal Financial Supervisory Authority Germany [BaFin], 2019). National supervisory authorities advocate various methods and instruments to mitigate the impact of sustainability risks on banks. One approach is the use of sustainability loans, which are either purpose-tied or linked to specific ESG goals (Du et al., 2022; Giraudet et al., 2021).

This article examines whether such credit products are effective tools for reducing sustainability risks for regional banks, the extent to which they are already utilized, and the level of demand for them. The study is based on a survey that provides insights

into the current application and perception of sustainable credit products.


This article addresses the following research questions (RQ):

RQ1: How effective are sustainable credit products as instruments for reducing sustainability risks in regional banks?

RQ2: To what extent are sustainable credit products currently used by regional banks and large banks?

RQ3: How do banks estimate the demand for sustainable loans?

This article begins with a terminological introduction to the key concepts of "Sustainable Risk," "Regional Banks," and "Sustainable Loans." The methodology of the survey is then explained. The results are presented in Chapter 4 and discussed in Chapter 5. The article ends with a conclusion.

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2 CLARIFICATIONS OF TERMINOLOGY

2.1 Sustainability Risk

Sustainability risk refers to the likelihood of an event having negative impacts on ESG-factors (BaFin, 2019). These risks are not a standalone type of risk but instead influence traditional banking risk categories such as credit risk, liquidity risk and others. Climate risks are a part of sustainability risks within the environmental (E) category. They can be further divided into physical risks and transition risks. (BaFin, 2019).

Physical risks arise from the direct and indirect consequences of climate change, such as natural disasters or extreme weather events. These can lead to financial losses by impairing the economic performance of borrowers or reducing the value of collateral and investments. Transition risks, on the other hand, stem from financial challenges associated with transitioning to a low-carbon economy. These risks are often linked to new regulations aimed at achieving climate goals (BaFin, 2019). These include, for example, policy measures to achieve the goals of the Paris Agreement, such as the European Green Deal or the EU Action Plan on Sustainable Finance. Such measures can negatively affect companies in highly polluting industries, for example, by increasing costs for CO₂ emissions or requiring investments in clean technologies.

2.2 Regional Banks

Regional banks are financial institutions primarily focused on providing financial services and transactions, such as deposit-taking, lending, and securities transactions, as well as other banking activities within a specific regional area (Büschgen, 2014). The loan customers of regional banks are predominantly small and medium-sized enterprises (SMEs). However, there is no precise deterministic distinction between regional banks and large banks. Within the framework of the Single Supervisory Mechanism, the European Central Bank classifies banks into so-called Less Significant Institutions (LSIs) and Significant Institutions (SIs). The primary distinguishing criterion is a balance sheet total below or above €30 billion (European Central Bank, 2024). Most regional banks report significantly smaller balance sheets, with approximately 88% of LSIs having total assets below €5 billion (German Federal Bank, 2021).

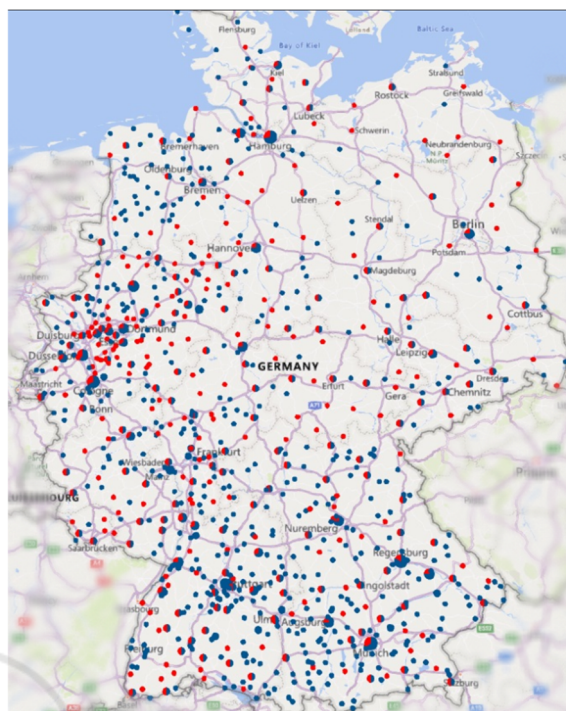


Figure 1: Geographical distribution of cooperative banks and savings banks in Germany, Status 2022; Adapted from (Strube et al., 2025).

At the end of 2023, there were around 1,400 banks in Germany, including approximately 353 savings banks and 695 cooperative banks (German Federal Bank, 2024). These two types of banks form a central part of the German banking landscape and are distributed across the entire country. Figure 1 illustrates the distribution of German regional banks, with savings banks shown in red and cooperative banks in blue. A particularly high density of regional banks is observed in the southern and western regions, reflecting smaller and potentially more climate-sensitive business areas. This vulnerability arises mainly from their geographic concentration, which increases their exposure to climate risks - such as floods, hailstorms, or droughts - that are caused by climate change. These events can cause significant damage to borrowers' fixed and current assets or to regional infrastructure.

Additionally, these banks are highly dependent on the dominant economic sectors in their respective regions, such as tourism, agriculture, mechanical engineering, or coal mining. Their lending activities are closely tied to the specific economic needs and structures of their regions. Regulatory changes, such as the introduction or increase of CO₂ pricing, structural changes within the region, or shifting market conditions, can therefore have a disproportional

tionately strong impact on regional banks. Due to their strong regional focus and limited diversification, such changes can significantly affect their credit risks and financial stability (Strube et al., 2025).

2.3 Sustainable Loans

Sustainable loans are credit structures designed to provide a clear ecological benefit. The focus is primarily on the environmental sector, such as renewable energy, pollution prevention and control, green technologies, and other environmentally friendly projects. The goal of sustainable loans includes reducing sustainability risks (Carrizosa and Ghosh, 2022). These loans can be divided into Green Loans and SLL, with the primary distinction lying in their purpose.

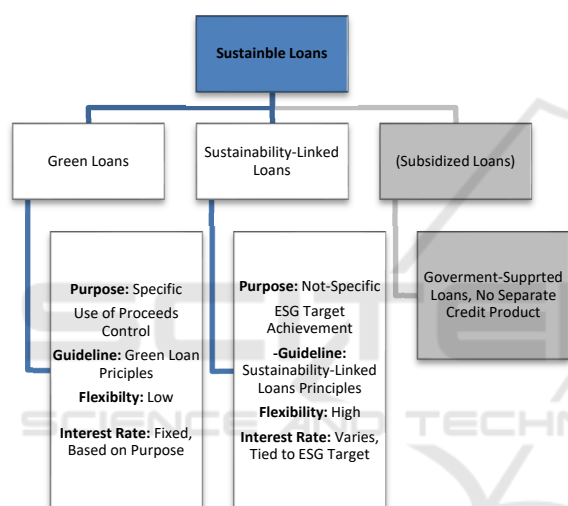


Figure 2: Sustainable Loans.

Green Loans are purpose-specific and exclusively finance or refinance environmental projects. Sustainability-Linked Loans (SLL), on the other hand, are available for general corporate purposes but are tied to predefined sustainability targets and performance indicators, typically monitored by the lender or external rating agencies. Sustainable loans may offer preferential interest rates. For SLLs, interest rates vary based on the achievement of predefined sustainability goals, functioning similarly to covenants in loan agreements. Depending on whether a company meets or fails to meet its sustainability objectives during the loan term, loan conditions can improve or worsen, respectively. For instance, achieving set sustainability targets can lead to more favorable credit terms for the borrower, and vice versa. Studies show that the average reduction in the interest rate for SLLs is between 5 and 10 basis

points, with higher spreads generally observed for companies with increased ESG and credit risks (Carrizosa and Ghosh, 2022; Pohl, 2022). Green loans typically also offer lower interest rates, which can be up to 8 basis points (Caramichael and Rapp, 2024).

Currently, there are no legal standards for sustainable loans. Banks rely on the principles of the Loan Market Association (LMA) as guidelines for structuring such loans. In the future, an EU standard similar to the one already developed for Sustainability Linked Bonds (Regulation (EU) 2023/2631) is anticipated. This standard is expected to come into effect by the end of 2024.

In some cases, subsidized loans are also subsumed under sustainable loans. These loans are similar in concept to Green Loans and are generally tied to a specific purpose. However, these are not standalone credit products provided by the banks themselves. Instead, the banks typically act as intermediaries for government-subsidized loan programs, such as those offered by the Kreditanstalt für Wiederaufbau (KfW) or regional development banks. These programs often target the financing of projects in areas such as energy efficiency, renewable energy, or sustainable construction. The role of the banks is primarily limited to advising on and facilitating the loan process. House banks often receive a service fee or a small interest margin for their role as intermediaries (KfW, 2024).

3 METHODOLOGY

The methodology is based on an exploratory survey, the results of which form the foundation of this study. The survey was developed in collaboration with the Sustainability Transformation Monitor (STM), a longitudinal study examining the progress of transformation in companies within the real economy and financial sector (*Sustainability Transformation Monitor*, 2023). The survey period began on September 11, 2024. As of the preliminary evaluation on November 16, 2024, 88 banks with total assets below €30 billion (the primary threshold for LSIs) and 18 banks with total assets exceeding €30 billion (SI) participated. The findings represent a preliminary analysis, as the survey period concluded on December 1, 2024.

The questionnaire was developed through multi-step process and was tested for errors and practicality in a pretest. The survey was conducted online, with participants' email addresses collected to prevent duplicate submissions. The questionnaire consisted of

multiple-choice questions, as well as open and closed questions, and covered various dimensions of sustainability transformation.

The data were analyzed using SPSS software, employing both descriptive and inferential statistical methods. Differences between LSI and SI were examined during the analysis.

The results of this survey are compared to a similar, independently conducted study from 2022, which also investigated the sustainability transformation of regional banks. For more detailed information on the methodology and findings of the 2022 study, readers are referred to the respective publication (Strube et al., 2023). Only LSI banks were questioned in this survey.

The methodology was carefully designed; however, potential limitations, such as possible biases due to self-selection of participants, should be taken into account.

4 RESULTS

In the survey, participating banks were initially asked about transformation financing through lending. Specifically, the question addressed whether the organization offers financial products whose issuance and/or interest rates are tied to specific sustainability criteria. Among the LSI banks (n=71), 35.2% stated that they already have such products in their portfolio. For 23.2%, the introduction of these products is in the planning stage, while around one-fifth of regional banks (22.9%) currently do not offer this type of loan.

Compared to the results of larger banks, it becomes clear that they are more advanced in implementing such products. Of the 17 larger banks participating, 94.1% already offer this type of loan, while only one bank (5.9%) indicated that it is still in the planning phase.

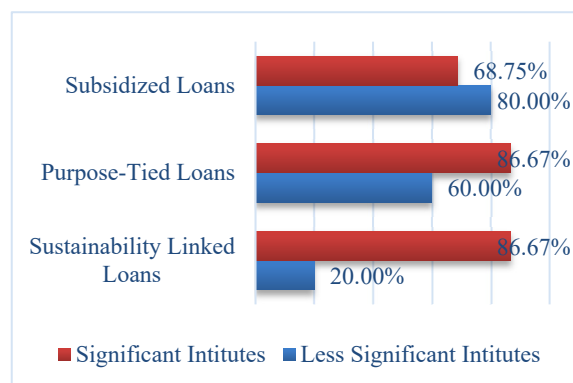


Figure 3: Share of Sustainable Loan Types in the Offer Portfolio of SI and LSI.

With regard to the question of which specific forms of sustainable loans are offered, LSIs show a clear focus on subsidized loans, as illustrated in Figure 3.

Classic Sustainable credit (Green Loans and SSL) products are significantly more prevalent among large banks. While some LSIs also offer Green Loans and SSL, their usage is considerably lower. Only 15 of the 71 LSI-banks surveyed (17.04%) utilize Green Loans, just 10 banks (11.37%) offering SSL.

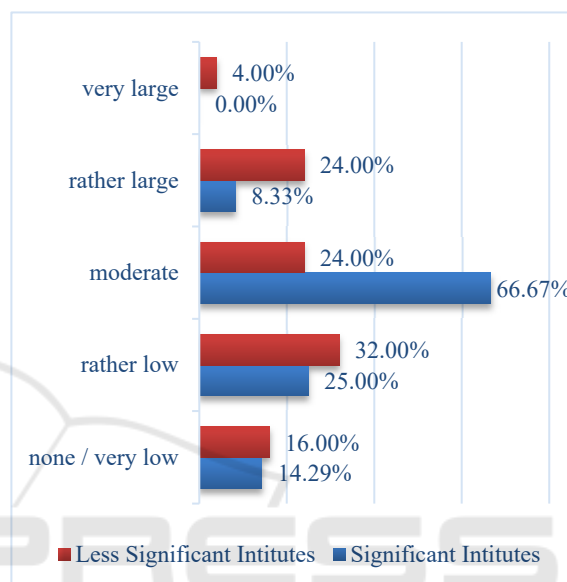


Figure 4: Assessment of Demand for Sustainable Loans by Significant and Less Significant Institutions.

Figure 4 illustrates the intensity of demand for sustainable loans from the perspective of banks. Among large banks, demand is predominantly perceived as moderate. In contrast, LSIs show a distribution across the entire rating scale. The average rating for both bank groups, at 3.6 and 3.8 respectively, falls within the range of "rather low" to "moderate." This suggests that customers of large banks do not exhibit significantly higher demand for these loan products compared to customers of smaller banks.

In the 2022 study, 21.1 % of respondents stated that they offer SSL, which is in line with the results of the current study. As shown in Table 1, participants in 2022 were also specifically asked about the perceived demand for SSL. With an average score of 2.2, the result fell into the 'low' category and was significantly below the overall average for Sustainable Loans as a whole. However, the surveyed banks generally believe that this type of loan provides a promising incentive for financing sustainable investments, with an average score of 3.5.

Table 1: Results Survey Sustainability Loans.

Do you think purpose-tied loans are a good incentive for companies to finance sustainable investments?						
	no	rather no	to some extent	rather yes	yes	Location paramete
Quantity	3	19	43	37	7	ø = 3.5
Percent	2.8%	17.4%	39.5%	33.9%	6.4%	Median: 3
How do you estimate your customers' demand for such loans?						
	very low	low	moderate	high	very high	Location paramete
Quantity	18	56	28	3	1	ø: 2.2
Percent	17.0%	52.8%	26.4%	2.8%	0.9%	Median: 2

The main reasons for not offering SLL were primarily technical and operational challenges. For instance, the banking software used by most smaller banks is often unable to adequately handle the additional conditions. Furthermore, there is a lack of expertise, experience, and personnel capacity to monitor the defined targets. Additionally, the limited availability of sustainability data from borrowers (typically smaller companies) makes evaluation and target setting challenging. Some banks also prefer to utilize alternative incentives, such as subsidized loans, rather than developing their own sustainable products (Strube et al., 2025).

5 DISCUSSION AND TECHNOLOGICAL CHALLENGES

Subsidized loans are the preferred instrument for smaller banks to promote sustainable investments by borrowers. This is not surprising. Due to their low administrative effort, reduced risk, and legal certainty, they are particularly easy for regional banks to implement. However, the disadvantages lie in their lack of flexibility, as subsidized loans are often limited to specific projects. As a result, certain sustainable projects demanded by companies cannot be financed if they are not part of the subsidy programs. Additionally, there are no options to use these loans specifically to address in-house sustainability risks, making it more challenging to manage risks outside the scope of subsidized areas.

To overcome these disadvantages, Green Loans are particularly suitable. By developing their own sustainable loan products, banks can account for internal specificities and risk concentrations, enabling a more effective management of sustainability risks. Nevertheless, compared to large banks, only a few regional banks currently offer this type of loan. This is primarily due to moderate overall demand and the

higher administrative effort compared to subsidized loans. The traditional default risk remains entirely with the bank, as the loan stays on its balance sheet. Additionally, the responsibility for monitoring the proper use of funds lies solely with the bank.

The cost-benefit ratio plays a crucial role, particularly for SLLs, for both borrowers and lenders. In addition to relatively low demand, technical and resource-related constraints in target monitoring led to relatively high implementation costs (compared to large banks). For borrowers, the additional information requirements are only worthwhile if they are offset by lower financing costs. Similarly, for the lending bank, the increased administrative effort and often lower interest rates must be compensated by significantly reduced risk costs (expected loss) to ensure the profitability of such loans.

This issue represents a Principal-Agent Problem (PAT) caused by information asymmetries between borrowers and banks (for PAT see Braun and Guston, 2003). The bank requires the borrower to provide credible certificates and reports for target monitoring to prevent moral hazard. Banks, on the other hand, incur significant costs for verifying and monitoring compliance with sustainability criteria and these assessments. If the costs of monitoring and verification exceed a reasonable risk premium, or if the overall information effort outweighs the interest savings, SLLs and Green Loans become uneconomical for both parties.

The relative effort is particularly high for small borrowers, who are typically financed by regional banks. In contrast to large corporations, small borrowers often lack the necessary resources and are not obligated to publish sustainability information. This also makes the audit particularly challenging for small banks. Large banks, on the other hand, have dedicated sustainability departments, customized IT systems, and significantly larger personnel resources

than smaller banks. It is therefore unsurprising that large banks are able to include SLLs and Green Loans in their product offerings. For regional banks, SLLs currently appear less suitable due to the high implementation and monitoring effort as well as the limited demand. Nevertheless, Green Loans and SLLs offer significant potential to reduce sustainability risks specifically at the company level, despite these challenges.

In the future, IT service providers and banking associations will need to play a key role in supporting regional banks with the design and implementation of these loan products. In addition, targeted training programs and knowledge platforms could help strengthen know-how and personnel resources within regional banks. This support will be essential to establish regional banks as active players in sustainable finance and to secure their long-term competitiveness.

6 CONCLUSION

This study highlights the opportunities and challenges regional banks face in utilizing sustainable loan products to address sustainability risks. While subsidized loans are widely used due to their simplicity and legal certainty, they lack the flexibility to address specific risks or diverse customer needs. Green Loans and SLL offer greater adaptability but require additional resources and effort.

Larger banks are more advanced in implementing these products, whereas regional banks often rely on subsidized loans. The reasons for this lie primarily in technical feasibility, a lack of know-how, and incomplete sustainability data, particularly from small businesses. Many banks continue to perceive the demand for sustainable loans as moderate to low, highlighting the need for greater market education and additional incentives. However, the introduction of sustainability loans is only economically viable for regional banks if the costs of gathering information on the borrower's side and verifying that information on the bank's side do not outweigh the financial benefits of reduced interest rates.

Investments in these products, along with support from banking associations and IT service providers, can help overcome technical and resource-related hurdles. Fundamentally, both Green Loans and SLL serve as strong incentives to support local economies and contribute to the transformation toward a sustainable financial system.

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